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DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT
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100224

January 8, 1993

Mr. Paul Johnston
Standard Chlorine of Delaware, Inc.
Governor Lea Road
P.O. Box 319
Delaware City, Delaware 19706

RE: Comments on the Bioremediation Treatability Study Workplan
Standard Chlorine of Delaware, Inc. Superfund Site
Delaware City, New Castle County, Delaware

Dear Mr. Johnston:

Attached is a list of comments from the Department of Natural Resources and Environmental Control (DNREC) on the bioremediation treatability study workplan prepared by Roy F. Weston, Inc on your behalf. Further comments will be provided at a later date, based upon the results of EPA's review of the document, as we have discussed in previous meetings.

As we have also discussed in previous conversations, this letter does not provide regulatory agency approval of the workplan at this time. This letter just provides DNREC's comments on the workplan so that these comments can be incorporated into the study before the study begins. Standard Chlorine has verbally stated that it will begin this treatablilty study and conduct it on its own in the interests of time and adherence to the Feasibility Study schedule.

If you have any questions regarding the attached comments, please contact me at 323-4540.

Sincerely,

Anne V. Hiller

Anne Hiller
Environmental Scientist III
Superfund Branch

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Attachment

pc: N. V. Raman
K. Kalbacher
C. Kostyshyn
R. Schulte
K. Lose (3HW42)

Attachment 1
Comments on Weston's Bioremediation Treatability Study Workplan

General Comments

1. Questions have been raised about the effect of acclimation time for the microorganisms on the results of the biodegradation tests. Please explain the choice of using microbial biomass from an activated sludge wastewater treatment plant as an inoculant instead of stimulated microorganisms from the site soils. Where will the sludge be obtained? Are the microorganisms in the biomass from the sludge acclimated to chlorinated benzenes? Please address these concerns.

2. Questions have arisen regarding the statement on pg. 2-4 that "the lower chlorinated products are generally of lower toxicity than the present molecule." The toxicities of the various chlorinated benzene compounds found on site appear to be similar.

3. A certain proportion of samples analyzed at Standard Chlorine for chlorinated benzenes should be split and also analyzed at another laboratory, as was done in the Remedial Investigation.

4. Testing frequency for both the batch and column tests should be done at more frequent intervals in order to better determine the rates of degradation, such as 0, 10, 20, 30, 45, and 60 days.

5. Concerns have been raised regarding the effects of the somewhat high average contaminant concentrations proposed to be used in the tests. Please provide reasoning for using these concentrations.

Batch Biotransformation Testing

1. Why was the decision made to conduct separate aerobic and anaerobic biodegradation tests, instead of or in addition to a linked anaerobic-aerobic test?

2. Since mercuric chloride is a laboratory contaminant, it is suggested that the samples inhibited with this compound be kept separate from other samples in the laboratory where the test is being performed to avoid cross contamination.

3. Nutrients should be added to the inhibited control before the inhibitor is added to make the control more similar to the nutrient amended sample. A second control, one which is an inhibited, nutrient amended, and inoculated sample is recommended.

4. What efforts will be made to account for potential volatilization of contaminants from the loosely stoppered flasks when determining the effectiveness of the aerobic biodegradation? Please explain why a closed system was not proposed.

Column Testing

1. Concerns have been raised about the possibility of flushing or solubilizing of contaminants during the test. Sampling of the leachate for TOX is suggested as an indirect way to determine if such a loss is occurring and to assist in mass-balance calculations. TOX could be used as a supplement to testing for chlorinated benzenes in the leachate.

2. Please define the frequency interval for monitoring pH, specific conductance and COD during the testing process, a minimum of two times per week was suggested as an appropriate interval..

3. Please provide further explanation of the attempt to simulate ten (10) years of operation in two (2) months. Questions regarding the feasibility of this attempt have arisen.

4. How will the permeability of the soil column be measured?

5. Collection of leachate from the column should utilize procedures that minimize volatilization.

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